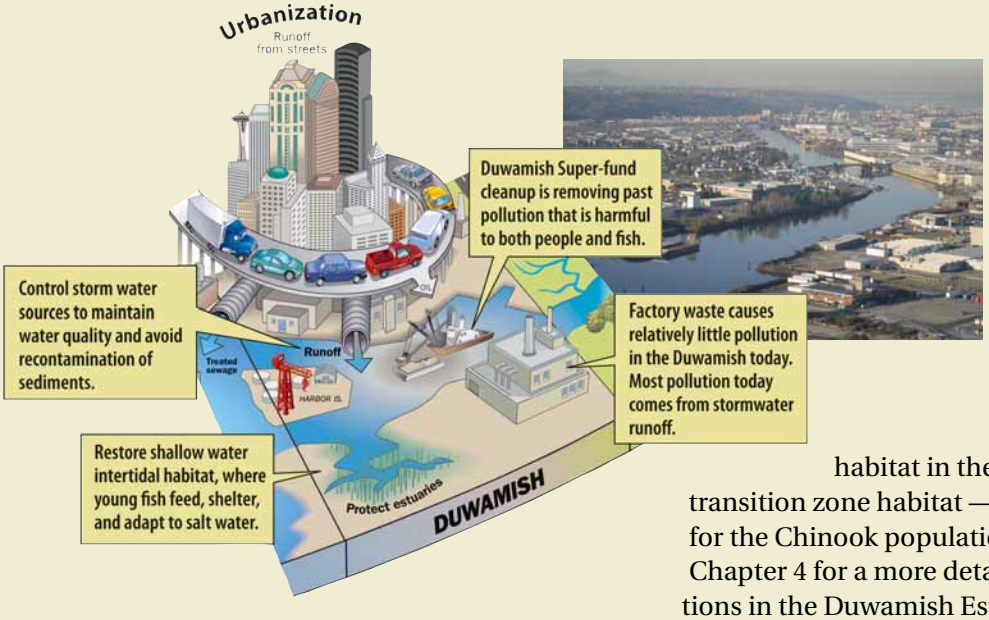


Much of the Duwamish is heavily industrialized and dramatically reconfigured. The lower five miles has been straightened, dredged, and heavily armored. View looks northwest from river mile 4.9 toward the South Park Bridge. December 2003 photo.

As the estuary for the Green River, the Duwamish provides critical habitat for Chinook salmon. Chinook, along with chum, are the salmonid species most dependent on healthy estuarine habitat. The Duwamish estuary begins at river mile 11, at the confluence of the Black River remnant with the Green River and extends down to Elliott Bay (river mile 0 at the southwest corner of Harbor Island).

The Duwamish Estuary is the part of WRIA 9 most dramatically transformed by the last 130 years of development. The upper portion of the Duwamish – above the Turning Basin at river mile 5.5 — has been diked and reveted, while the lower Duwamish has been extensively dredged and filled. The majority of the Duwamish Estuary Subwatershed lies in the cities of Seattle and Tukwila. Industrial (43%) and residential (39%) development are the primary land uses. The Duwamish is an economic powerhouse for King County, home to 10% of the jobs in the county while making up just 1% of the land area. As a result of development and land use, the Duwamish has lost 97% of the habitat it provided 150 years ago. The Duwamish also suffers from decades of industrial pollution that have resulted in the lower five miles of the river becoming a Superfund cleanup site. Scientific assessment work for this Plan suggests that this loss, degradation, and fragmentation of estuarine habitat in the Duwamish – particularly transition zone habitat — is a limiting habitat factor for the Chinook populations of the watershed. (See Chapter 4 for a more detailed description of conditions in the Duwamish Estuary Subwatershed.)

The following portfolio of policies and actions is designed to:

- Expand and enhance the estuary, particularly vegetated shallow subtidal and intertidal habitats and brackish marshes, by restoring dredged, armored, and filled areas;
- Enlarge the Duwamish estuarine transition zone habitat by expanding the shallow water and slow water areas;
- Protect and restore habitat that provides refugia (particularly side channels, off channels, and tributary access) and habitat complexity (particularly pools) for juvenile salmon over a range of flow conditions and at a variety of locations (e.g., mainstem channel edge, river bends, and tributary mouths);
- Enhance natural sediment processes (transport-delivery);
- Protect and restore water quality (e.g., temperature, dissolved oxygen, metals and organics) by addressing point and nonpoint (specifically stormwater runoff) pollution sources; and
- Protect and improve sediment quality through the Lower Duwamish Waterway Superfund cleanup and other cleanup/control efforts.

Policy DU1:

Endorse the Comprehensive Environmental Response, Compensation, and Liability Act (Superfund) assessment and cleanup of contaminated sediments in the Lower Duwamish Waterway Superfund area by the responsible parties and regulatory agencies because it will improve ecosystem health and increase the quality of existing salmon habitat.

Policy DU2:

Encourage the Natural Resource Trustees to develop Natural Resources Damages Assessment (NRDA) approaches that allow habitat creation/restoration concurrent with Superfund cleanup of the Lower Duwamish Waterway. This will accelerate the rate at which mitigation occurs and be more efficient.

Policy DU3:

Encourage businesses in the Lower Duwamish to address source control issues to minimize water pollution and the potential for sediment contamination or re-contamination.

Policy DU4:

Encourage private property owners to participate in habitat restoration on their land.

Policy DU5:

Encourage the removal of derelict vessels.

Replace This Page with Figure 7-4

(See separate 11x17 file)

Program D-1:
Eliminate Perennial Pepperweed

Carry out a comprehensive cooperative weed control effort to eliminate perennial pepperweed (*Lepidium latifolium*), a Class B noxious weed, which has formed a heavy infestation from upstream of North Wind's Weir (river mile 6.3) to Herring's House Park (river mile 1.1). This weed grows well in intertidal and riprapped areas. Pepperweed control is typically done by hand, making control relatively expensive and time-consuming compared to control of other weeds. This program would be carried out by the King County Noxious Weeds Program in cooperation with public and private landowners.

LINKAGES

Conservation Hypotheses Addressed

- *Protecting and improving riparian vegetation (All-2)*

Habitat Management Strategies

- *Rehabilitate riparian areas in the entire subwatershed.*
- *Restore native riparian communities*

Program D-2:
Eliminate Common Reed from SR 509 Intertidal Wetlands

Carry out a comprehensive cooperative weed program to eliminate non-native common reed (*Phragmites australis*) at the SR 509 Intertidal Wetlands site and rehabilitate the existing restoration site. This highly-invasive weed is localized at this point and could be controlled at much lower cost than if it were to spread throughout the Lower Duwamish.

Control options at this site could include excavating as much of the common reed-infested area as possible, as well as some of the existing upland habitat, much of which is overrun with other invasive plants. This excavation would slope the banks to a flatter slope angle and create elevations suitable for mudflat and emergent wetland habitats. Control of invasive weeds in the upland areas would complement these actions. This comprehensive approach would physically remove a great deal of the common reed and create conditions that favor the formation and maintenance of more desirable habitat types.

This program would be carried out by the King County Noxious Weeds Program in cooperation with the land owners.

The SR 509 wetlands are almost completely filled with common reed. February 2005 photo.

LINKAGES

Conservation Hypotheses Addressed

Protecting and improving riparian vegetation (All-2)

Habitat Management Strategies

Rehabilitate riparian areas in the entire subwatershed

Restore native riparian communities

Program D-3:
Develop a Transition Zone Habitat "Blueprint"

Develop a "blueprint" for habitat restoration projects in the Duwamish Estuary transition zone (Figure 4-1).

The boundary of the transition zone "blueprint" should be initially determined using the results of the Duwamish transition zone study that will be completed in 2005. Use results from this study and all other relevant information to further identify and prioritize restoration/rehabilitation/substitution projects – including those listed in this Plan — for implementation.

The "blueprint" could incorporate the latest science with information about willing land owners, economic considerations, and overall feasibility and effectiveness evaluations to identify the best locations for habitat restoration/rehabilitation/substitution projects.

To the extent the transition zone encompasses Turning Basin #3 and areas farther downstream, the "blueprint" should be coordinated with Natural Resources Damages Assessment mitigation associated with the Lower Duwamish Waterway Superfund cleanup.

Periodic refinement of the "blueprint" should take into account any subsequent scientific findings on the nature and extent of the transition zone.

LINKAGES

Conservation Hypotheses Addressed

- *Protecting and improving riparian vegetation (All-2)*
- *Enlarging the Duwamish River estuarine transition zone habitat (Duw-3)*

Habitat Management Strategies

- *Restore intertidal mudflats (below RM 7) and channel edge habitats (upstream of RM 7) to create low velocity and/or shallow water habitat*
- *Substitute lost slow water/shallow areas, focusing actions at the mouth of the Duwamish to River Mile 1, between River Miles 2-5, and upstream of River Mile 5.5*
- *Rehabilitate riparian areas in the entire subwatershed*

Program D-4:
Develop Improvements in Dredging/Sediment Use

Encourage the U.S. Army Corps of Engineers to identify strategies for maintenance dredging at Turning Basin #3 that:

- Minimize harmful impacts to salmon habitat in the dredged area; and
- Improve salmon habitat both in the dredged area and elsewhere in the Duwamish and Marine Nearshore Subwatersheds (e.g., through the use of clean dredged sediment to expand/improve shallow water habitat).

Turning Basin, looking southeast from river mile 4.9. Biennial dredging currently occurs in basin at upper right. December 2003 photo.

LINKAGES

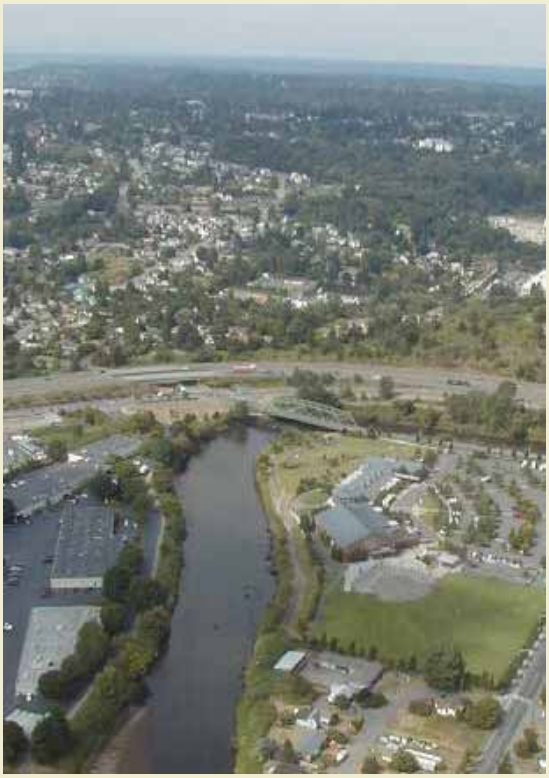
Conservation Hypotheses Addressed

- *Protecting and improving sediment quality*

Habitat Management Strategies

- *Restore intertidal mudflats (below RM 7) and channel edge habitats (upstream of RM 7) to create low velocity and/or shallow water habitat at*
- *Restore sediment and riparian processes/ conditions that influence shallow water habitat quality*
- *Rehabilitate sediment recruitment from both tidal and riverine processes*

Project Duw-1:
Shallow Water Habitat Creation (15 Acres) at RM 11.0-7.0 (Both Banks)



The Duwamish at river mile 8.1. Tukwila Community Center is to right. July 2004 photo.

LINKAGES

Conservation Hypotheses Addressed

- *Protecting and improving water quality (All-1)*
- *Protecting and improving riparian vegetation (All-2)*
- *Preventing new bank/shoreline armoring and fill and removing existing armoring (All-6)*
- *Protecting and restoring side channels, off channel habitat, tributary access, and pools (Duw-4)*

Habitat Management Strategies

- *Rehabilitate riparian areas in the entire subwatershed*
- *Substitute habitat features (e.g., large woody debris) to stabilize banks, create slow water areas (e.g., pools upstream of RM 6) and habitat complexity*
- *Substitute off-channel habitats through creation of wetlands and sloughs*
- *Substitute lost slow water/shallow areas, focusing actions at the mouth of the Duwamish to River Mile 1, between River Miles 2-5, and upstream of River Mile 5.5*

Project Description

In river miles 11.0-7.0, create a minimum of 15 acres of new off-channel shallow water/marsh habitat, with associated riparian vegetation.

Because of the large size of this project, it may be necessary to conduct it in phases and in multiple locations (the 15 acres need not be contiguous).

The downstream limit of the project area may be adjusted to match the upstream boundary of the transition zone definition resulting from the Duwamish transition zone study ending in 2005.

Opportunities and Constraints

- This project depends on identifying suitable properties whose owners are willing to sell. Cost of property in this area is high. Even doing the project in phases and multiple locations may require the simultaneous acquisition of several adjacent parcels to create projects with adequate habitat value and economies of scale.

Project Duw-2:
Shallow Water Habitat Creation and Bank Reshaping at RM 10.3-9.9 (Right Bank)

Project Description

This project would create off-channel, shallow-water refuge habitat on the inside of a meander at river miles 10.3 to 9.9, right bank. The project would acquire property from the private landowner, if the company is willing to sell, and remove existing structures. The project would re-slope the rock-lined and oversteepened bankline to create a low bench and install large woody debris along the main river bank and within a newly excavated sandy beach landward from the bank line. Also included would be excavation of shallow, off-channel habitat farther from the channel that would be inundated during winter and spring river stages (about seven feet). The project would add large woody debris in this excavated area and plant with native riparian trees and shrubs to provide a flood refuge and off-channel habitat for juvenile salmonids.

Alternatively, the entire project area could be excavated to provide shallow water habitat that extends nearly to the BNSF Railway embankment at the east edge of the property.

Opportunities and Constraints

- This project depends on the business property owner being willing to sell.

LINKAGES

Conservation Hypotheses Addressed

- *Protecting and improving riparian vegetation (All-2)*
- *Preventing new bank/shoreline armoring and fill and removing existing armoring (All-6)*
- *Protecting and restoring side channels, off channel habitat, tributary access, and pools (Duw-4)*

Habitat Management Strategies

- *Rehabilitate riparian areas in the entire subwatershed*
- *Substitute habitat features (e.g., large woody debris) to stabilize banks, create slow water areas (e.g., pools upstream of RM 6) and habitat complexity*
- *Substitute off-channel habitats through creation of wetlands and sloughs*

Project Duw-3:
Bank Restoration and Revetment Set Back at RM 8.9-8.6; 8.4-8.2 (Left Bank)

Green River Trail and parking lot that would be set back in project area. River is to left. February 2005 photo.

LINKAGES

Conservation Hypotheses Addressed

- *Protecting and improving riparian vegetation (All-2)*
- *Preventing new bank/shoreline armoring and fill and removing existing armoring (All-6)*

Habitat Management Strategies

- *Substitute habitat features (e.g., large woody debris) to stabilize banks, create slow water areas (e.g., pools upstream of RM 6) and habitat complexity*
- *Rehabilitate riparian areas in the entire subwatershed*

Project Description

This project would reshape the revetment at Gateway South at river miles 8.9-8.6 and 8.4-8.2, left bank. A segment of the Green River Trail would be relocated westward to allow reshaping of the revetment. The project would place large woody debris and revegetate the river bank with native riparian species.

Opportunities and Constraints

- This project depends on voluntary participation by commercial property landowners through easement, sale, or other incentive to allow removal of portions of several parking lots in order to set back the trail.

Project Duw-4:
Wastewater Pipeline Crossing Retrofit at RM 8.0

Project Description

This project would determine the extent to which the wastewater pipeline crossing at river mile 8.0 alters salinity upstream. If reducing the profile of the pipeline crossing will produce significant benefits in terms of extending the transition zone, the project would retrofit the pipeline to lower its profile.

The King County Metro wastewater pipeline crossing at this location during the 1990s was supposed to be installed below the bed of the river. However, it was installed at a higher elevation and armored with riprap, which forms a rock berm that is partially exposed when low tide coincides with late summer/early fall minimum river flows. This barrier may alter upstream water chemistry by limiting the movement of the salt wedge upstream. It is unclear whether this limitation occurs during the period of downstream juvenile migration. The barrier may also pose a partial adult fish passage migration barrier at certain river and tidal stages; further study is needed to confirm whether this also is an issue.

Opportunities and Constraints

- Retrofitting the wastewater pipeline would be a major capital project. It could also require the addition of a pumping station, which would create greater capital costs and probably substantial ongoing operations and maintenance costs.

Riprap being placed over the pipeline during construction. Photo courtesy of City of Tukwila.

LINKAGES

Conservation Hypotheses Addressed

- *Fish passage generally and water quality in terms of salinity*

Habitat Management Strategies

- *The functions and structure addressed by this action do not directly address habitat management strategies specific to the Duwamish Estuary Subwatershed*

Project Duw-5:
42nd Ave. S. Bank Restoration at RM 7.9-7.1 (Both Banks)

Duwamish looking downstream from pedestrian bridge at river mile 7.6 toward northern part of project area. February 2005 photo.

LINKAGES

Conservation Hypotheses Addressed

- *Protecting and improving riparian vegetation (All-2)*
- *Preventing new bank/shoreline armoring and fill and removing existing armoring (All-6)*

Habitat Management Strategies

- *Rehabilitate riparian areas in the entire subwatershed*
- *Substitute habitat features (e.g., large woody debris) to stabilize banks, create slow water areas (e.g., pools upstream of RM 6) and habitat complexity*

Project Description

Work with the neighboring community to improve riparian habitat conditions on the west side of 42nd Ave. S. at river miles 7.9 to 7.3, right bank. Relocate the water main that is presently located under the riverward (west) edge of 42nd Avenue South to the opposite (east) side of the street in order to allow restoration of a more stable bank angle and/or excavation of low vegetated benches along the river. A mid-channel island with old wooden pilings exists towards the upstream end of the reach. Large woody debris would be added to this island by chaining them to the existing pilings and strategically placed anchor rocks. In the northern (downstream portion of this reach), unpaved parking areas at the top of the bank encroach into the riparian corridor. This portion of the project site could be fenced off with a guard rail and/or posted by the City of Tukwila with "no parking" signs to eliminate these impacts and allow the restoration of vegetation (while still allowing pedestrian access to the river).

A complementary project would consist of working with willing property owners at river miles 7.6 to 7.1, left bank, to restore riparian vegetation on residential parcels. If a flat bank toe can be created along the inside bend at river mile 7.3-7.2, it could possibly support salt marsh vegetation.

Opportunities and Constraints

- Relocation of the water main would constitute a major capital project.
- On the left bank, project depends on voluntary participation of residential property owners.

Project Duw-6:
S. 115th St. Bank Restoration and Revetment Setback at RM 7.2-6.9 (Right Bank)

Project Description

Reshape and revegetate the river bank along South 115th Street at river miles 7.2 to 6.9, right bank. Set back the revetment where possible. The project would include placement of large woody debris and planting of native vegetation.

Further development of this project should include consultation with neighbors who successfully advocated for public purchase of a portion of the project site for a future park.

Opportunities and Constraints

- This project depends on voluntary participation by a commercial property landowner through easement, sale, or other incentive to allow set back of South 115th St.
- The eastern portion of the project area is owned by the City of Tukwila for use as a future park.

Looking upstream from East Marginal Way S. bridge to project area. February 2005 photo.

LINKAGES

Conservation Hypotheses Addressed

- *Protecting and improving riparian vegetation (All-2)*
- *Preventing new bank/shoreline armoring and fill and removing existing armoring (All-6)*

Habitat Management Strategies

- *Rehabilitate riparian areas in the entire subwatershed*
- *Substitute habitat features (e.g., large woody debris) to stabilize banks, create slow water areas (e.g., pools upstream of RM 6) and habitat complexity*

Project Duw-7:
Shallow Water Habitat Creation (20 Acres) at RM 7.0-5.5 (Both Banks)

Seining to collect juvenile salmon migrants has confirmed concentrated fish use in the Duwamish transition zone. Continued study in 2005 will refine the boundaries of the transition zone. May 2005 photo.

LINKAGES

Conservation Hypotheses Addressed

- *Expanding and enhancing vegetated shallow subtidal and intertidal habitats and brackish marshes (Duw-1)*
- *Enlarging the Duwamish River estuarine transition zone habitat (Duw-3)*

Habitat Management Strategies

- *Restore intertidal mudflats (below RM 7) and channel edge habitats (upstream of RM 7) to create low velocity and/or shallow water habitat*
- *Rehabilitate riparian areas in the entire subwatershedSubstitute lost slow water/shallow areas, focusing actions at the mouth of the Duwamish to River Mile 1, between River Miles 2-5, and upstream of River Mile 5.5*

Project Description

At river miles 7.0-5.5, both banks, create a minimum of 20 acres of new off-channel shallow water/marsh habitat with associated riparian vegetation.

Because of the large size of this project, it may be necessary to conduct it in phases and in multiple locations (the 20 acres need not be contiguous).

The upstream limit of the potential project area may be revised based on the results of the Duwamish transition zone study ending in 2005.

The 20 acres created in this area would be in addition to acreage created by project Duw-10: North Wind's Weir.

An intermediary step prior to conducting this project should be the development of a Transition Zone'"blueprint" based on the boundaries identified by the Duwamish transition zone study ending in 2005 (see Duwamish program D-3).

Opportunities and Constraints

- This project depends on identifying suitable properties whose owners are willing to sell. Cost of property in this area is high. Even doing the project in phases and multiple locations may require the simultaneous acquisition of several adjacent parcels to create projects with adequate habitat value and economies of scale.

Project Duw-8:
Riverton Creek Habitat Rehabilitation and Fish Passage Improvement at RM 6.6 (Left Bank)

Project Description

Rehabilitate habitat within Riverton Creek and improve its connection to the Duwamish River to improve fish access and provide off-channel rearing and refuge habitat.

This 3.4-acre site is along the lower section of Riverton Creek where it meets the Duwamish at about river mile 6.6. The project includes installation of large woody debris, removal of accumulated sediment, addition of gravel, and revegetation with native riparian species. In addition, a flapgate at the mouth would be replaced with a self-regulating tidegate to allow normal tidal flushing while reducing flooding on Riverton Creek during high flows in the Duwamish.

This is a Green/Duwamish Ecosystem Restoration Project.

Opportunities and Constraints

- This project also will benefit coho salmon that spawn in Riverton Creek.

Coho salmon in Riverton Creek. Photo courtesy of City of Tukwila.

LINKAGES

Conservation Hypotheses Addressed

- *Protecting and improving water quality (All-1)*
- *Protecting and improving riparian vegetation (All-2)*
- *Protecting and improving access to tributaries (All-3)*

Habitat Management Strategies

- *Restore tributary access by removing fish passage barriers and modifying tributary mouth configuration*
- *Rehabilitate riparian areas in the entire subwatershed*
- *Rehabilitate wetlands and sloughs where they currently exist, including re-connecting those isolated from the river channel or re-establishing wetlands/sloughs*

Project Duw-9:
Bank Restoration and Revetment Setback at RM 6.6-5.5 (Left Bank)

Looking downstream to project area on the far (left) bank at river mile 6.3. May 2005 photo.

LINKAGES

Conservation Hypotheses Addressed

- *Protecting and improving riparian vegetation (All-2)*
- *Preventing new bank/shoreline armoring and fill and removing existing armoring (All-6)*
- *Enlarging the Duwamish River estuarine transition zone habitat (Duw-3)*

Habitat Management Strategies

- *Rehabilitate riparian areas in the entire subwatershed*
- *Substitute habitat features (e.g., large woody debris) to stabilize banks, create slow water areas (e.g., pools upstream of RM 6) and habitat complexity*

Project Description

Set back and restore the river bank at river miles 6.6 to 5.5, left bank. Revegetate the river banks with native riparian species.

An intermediary step prior to conducting this project should be the development of a Transition Zone "blueprint" based on the boundaries identified by the Duwamish transition zone study ending in 2005 (see Duwamish program D-3).

Opportunities and Constraints

- This project depends on voluntary participation by a commercial property landowner(s) through easement, sale, or other incentive to allow set back of the river bank.

Project Duw-10:
North Wind's Weir Shallow Water Habitat Rehabilitation at RM 6.3 (Right Bank)

Project Description

Create two acres of off-channel, shallow water habitat in the transition zone at North Wind's Weir, river mile 6.3, right bank. Project includes excavation of two acres of off-channel habitat and planting of native riparian species.

Soil remediation is occurring in two phases:

- First phase for compliance was completed in 2004; and
- Second phase for fish and wildlife habitat will be completed in 2006, provided funding is available.

This is a Green/Duwamish Ecosystem Restoration Project.

Opportunities and Constraints

- Land was purchased by local government partners and has strong support from local government leaders.
- First phase of soil remediation is completed.

Soil remediation underway at project site. November 2004 photo.

LINKAGES

Conservation Hypotheses Addressed

- *Protecting and improving riparian vegetation (All-2)*
- *Expanding and enhancing vegetated shallow subtidal and intertidal habitats and brackish marshes (Duw-1)*
- *Enlarging the Duwamish River estuarine transition zone habitat (Duw-3)*

Habitat Management Strategies

- *Restore intertidal mudflats (below RM 7) and channel edge habitats (upstream of RM 7) to create low velocity and/or shallow water habitat*
- *Rehabilitate riparian areas in the entire subwatershed*
- *Substitute lost slow water/shallow areas, focusing actions at the mouth of the Duwamish to River Mile 1, between River Miles 2-5, and upstream of River Mile 5.5*

Project Duw-11:
Shallow Water Habitat Creation (10 Acres) at RM 5.5-4.7 (Both Banks)

Turning Basin at river mile 5.3, looking north toward project area. December 2003 photo.

LINKAGES

Conservation Hypotheses Addressed

- *Expanding and enhancing vegetated shallow subtidal and intertidal habitats and brackish marshes (Duw-1)*
- *Enlarging the Duwamish River estuarine transition zone habitat (Duw-3)*

Habitat Management Strategies

- *Restore intertidal mudflats (below RM 7) and channel edge habitats (upstream of RM 7) to create low velocity and/or shallow water habitat*
- *Rehabilitate riparian areas in the entire subwatershed*
- *Substitute lost slow water/shallow areas, focusing actions at the mouth of the Duwamish to River Mile 1, between River Miles 2-5, and upstream of River Mile 5.5*

Project Description

At river miles 5.5-4.7, both banks, create a minimum of 10 acres of new off-channel, shallow water/marsh habitat.

Because of the large size of this project, it may be necessary to conduct it in phases and in multiple locations (the 10 acres need not be contiguous). One possible site for consideration is the Hamm Creek/City Light North property at river mile 5.2-4.9, left bank.

The downstream limit of the potential project area may be revised based on the results of the Duwamish transition zone study ending in 2005.

An intermediary step prior to conducting this project should be the development of a Transition Zone "blueprint" based on the boundaries identified by the Duwamish transition zone study ending in 2005 (see Duwamish program D-3).

Opportunities and Constraints

- This project depends on identifying suitable properties whose owners are willing to sell. Cost of property in this area is high. Even doing the project in phases and multiple locations may require the simultaneous acquisition of several adjacent parcels to create projects with adequate habitat value and economies of scale.
- There may be opportunities to create/improve off-channel habitat in aquatic lands outside the shipping channel, possibly in conjunction with sediment cleanup efforts.
- Use of the Hamm Creek/City Light North property depends on Seattle City Light agreeing to sell the property and securing a suitable alternative site for future substation or electrical generation needs.

Project Duw-12:
South Park Bank Restoration and Shallow Water Habitat Creation at RM 3.8-3.7 (Left Bank)

Project Description

Rehabilitate a series of small shallow-water habitats at street ends to create two acres of shallow water and riparian habitat and increase the shoreline from 1,450 feet to 2,225 feet. This two-phase project was developed by local community groups in cooperation with private property owners.

Opportunities and Constraints

- Residential property owners and neighbors helped develop project, creating a high level of community support.

Left bank of the Duwamish in South Park showing "Duwamish Revival" project area. February 2005 photo.

LINKAGES

Conservation Hypotheses Addressed

- *Protecting and improving riparian vegetation (All-2)*
- *Preventing new bank/shoreline armoring and fill and removing existing armoring (All-6)*
- *Expanding and enhancing vegetated shallow subtidal and intertidal habitats and brackish marshes (Duw-1)*

Habitat Management Strategies

- *Rehabilitate shorelines to provide shallow water along the banks of the Duwamish River, particularly in the industrial/commercial areas between RM 0-1, 2-5, and upstream of the Turning Basin (RM 5.5)*
- *Rehabilitate riparian areas in the entire subwatershed*
- *Substitute lost slow water/shallow areas, focusing actions at the mouth of the Duwamish to River Mile 1, between River Miles 2-5, and upstream of River Mile 5.5*

Project Duw-13:
Kellogg Island Rehabilitation at RM 1.4-1.2

Kellogg Island in 1966 shortly after filling began. Log rafts are moored around perimeter of island. Photo courtesy of Port of Seattle.

LINKAGES

Conservation Hypotheses Addressed

- *Protecting and improving riparian vegetation (All-2)*
- *Expanding and enhancing vegetated shallow subtidal and intertidal habitats and brackish marshes (Duw-1)*

Habitat Management Strategies

- *Rehabilitate riparian areas in the entire subwatershed*
- *Substitute lost slow water/shallow areas, focusing actions at the mouth of the Duwamish to River Mile 1, between River Miles 2-5, and upstream of River Mile 5.5*

Project Description

Rehabilitate/reconfigure Kellogg Island and improve riparian vegetation at river mile 1.4-1.2. Reshape Kellogg Island to provide more off-channel and marsh habitat by excavating some of the island to provide more shallow water/intertidal area. Restoration options range from scalping the entire island to re-creating its historic profile to creating several lagoons.

Prior to 1965, the island provided some tidal marsh habitat. Beginning in 1965-1966, dredge spoils were deposited on the island and this continued until the mid-1970s.

Opportunities and Constraints

- Soil contamination may be an issue because the island was built up with dredge spoils, presumably from the Lower Duwamish Waterway.
- Kellogg Island is owned by the Port of Seattle, which has no development plans for the site that would preclude the project. The Port wishes to maintain future control over decisions affecting its land.